

## SEQUENCE LISTING

<110> Probiogen AG

<120> Immortalized Avian Cell Lines for Virus Production

<130> 042666wo/JH/PCH

<140>

<141>

<150> 03025158.1

<151> 2003-11-03

<160> 19

<170> PatentIn Ver. 2.1

<210> 1

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS182

<400> 1

actcgagctg acgtgtatgt tatt

24

<210> 2

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS183

<400> 2

cacacgcaat cacagggtt

18

<210> 3

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS184

<400> 3

actcgagtca tggaggcttg ggagt

25

<210> 4

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS185

<400> 4

acacatttca gtacctca

18

<210> 5  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer  
VintSA-F

<400> 5  
aaggtaaccct ccctagtcgg agtga 25

<210> 6  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer Vint  
SA-R

<400> 6  
caatgtacag agtgggctcc tgtgg 25

<210> 7  
<211> 6471  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Plasmid  
pEFAd5E1A

<400> 7  
gtaccgaatt caagcttcgt gaggctccgg tgcccgtcag tgggcagagc gcacatcgcc 60  
cacagtcccc gagaagttgg gggggagggtt cgccaattgtt accgggtgcct agagaagggtt 120  
gcgcggggta aactggggaa gtgatgtcgt gtactggctc cgccttttc cggagggtgg 180  
gggagaaccg tatataagtgt cagtagtcgc cgttaacgtt cttttcgca acgggtttgc 240  
cgccagaaca caggttaagtgt ccgtgtgtgg ttcccgccgg cctggcctct ttacgggtta 300  
tggcccttgc gtgccttggaa ttacttccac ctggctccag tacgtgattt ttgatccgaa 360  
gctggagcca ggggggggccc ttgcgttta ggagccctt cgcctcgatc ttgagtttag 420  
gcctggcttg ggcgttgggg ccggccgtgt cgaatctggt ggcacccctcg cgcctgtctc 480  
gctgtttcg ataagtctct agccatttaa aattttttagt gaccctgtgc gacgtttttt 540  
ttctggcaag atagtcttggt aaatggggc caggatctgc acactggat ttcggtttttt 600  
ggggccgggg cccggcgcgg gggccgtcgcc tcccaagcgca catgttccggc gaggccgggc 660  
ctgcgagcgc ggcacccggag aatcgacgg gggtagtctc aagctggccgc gcctgtctc 720  
gtgcctggcc tgcgtccgcgt gtgtatcgcc ccgcctggg cggcaaggctt ggcctggctcg 780  
gcaccatgtt cgtgacggaa aagatggccg cttccggcc ctgtccagg gggctcaaaa 840  
tggaggacgc ggcgttgggg agagccggcg ggttagtaccc acacacaaag gaaaaggggcc 900  
tttccgtctt cagccgtcgc ttcatgtgac tccacggat accggggccgc gtccaggcc 960  
ctcgatttagt tctggatgtt ttggatgtacg tcgttttagt gttggggggaa ggggttttat 1020  
gcgtatggat ttccccacac tgagtgggtt gagactgaag ttggccaggc ttggcacttg 1080  
atgtatttctt ctttggaaatt tggcctttt gagttggat cttgggttcat tctcaaggct 1140  
cagacagtgg ttcaaagttt tttcttcca tttcagggtgt cgtgaacactt cgagctgacg 1200  
tgtatgttat ttataccggg tgagttccctc aagaggccac tcttggatgtgc cagcgatgtt 1260  
agttttctcc tccgagccgc tccgacaccg ggactgaaaa tgagacatat tatctgcac 1320  
ggaggtgtta ttaccgaaga aatggccggcc agtctttgg accagctgtat cgaagaggtt 1380  
ctggctgata atcttccaccat ttcttagccat tttgaaccac ctaccottca cgaactgttat 1440

gattttagacg tgacggcccc cgaagatccc aacgaggagg cggttcgca gatttttccc 1500  
gactctgtaa tggcgcgt gcagggagg attgacttac tcactttcc gccggcgccc 1560  
ggttctccgg agccgcctca ctttcccg cagcccagc agccggagca gagagccttg 1620  
ggtccgggtt ctatccaaa cttgtaccc gaggtgatcg atcttacctg ccacgaggt 1680  
ggcttccac ccagtgcga cgaggatgaa gagggtgagg agttgtgtt agattatgt 1740  
gagcaccccg ggcacgggtt caggcttgc cattatcacc ggaggaatac ggggaccba 1800  
gatattatgt gttcgcttgc ctatatgagg acctgtggca tgggtctca cagaatgt 1860  
aaattatggg cagtgggtga tagagtggg ggttgggtt gtaatttt ttttaattt 1920  
ttacagttt gtggttaaa gaatttgtt ttgtgattt tttaaaaggt cctgtgtctg 1980  
aacctgagcc tgagcccgag ccagaacccg agcctgcaag acctacccgc cgtcctaaaa 2040  
tggcgcttc tatccgtaga cccccgacat cacctgtgtc tagagaatgc aatagtagta 2100  
cgatagctg tgactccggt cttctaaaca cacctccctga gatacaccgg gtggcccg 2160  
tgtccccat taaaccagtt gccgtgagag ttggggccctt cttttttttt 2220  
tcgaggactt gottaacgg cctggcaac cttttttttt 2280  
cataagggtt aaacctgtga ttgcgtgtgg tttttttttt 2340  
tgtgccttc agttgccagc catctgtgtt ttggggccctt 2400  
ggaagggtcc actccactg tcctttctta ataaaatgag gaaattgcat cgcattgtct 2460  
gagtaggtt catttattt cttttttttt 2520  
ggaagacaat agcaggcatg ctggggatgg cccgggctt atgggttctg aggccgaaag 2580  
aaccagctgg ggctctaggg ggtatccccca cggccctgt agcggcgcatt 2640  
gggtgtgggt gttacgcga gcgtgaccgc tacacttgcg agcgcctag cgcggccgtcc 2700  
tttcgcttc ttcccttctt tttccgtttttt 2760  
tcggggcatc cttttaggg tccgattttt 2820  
tgattaggtt gatgggttac gtagtggcc atgcggccat 2880  
gacgttggag tccacgttct ttaatagttt 2940  
ccctatctcg gtctattttt ttgattttata 3000  
aaaaaatagag ctgatTTTaa aaaaattttaa 3060  
tttaggggtt gaaagtcccc aggctccccca 3120  
caatttagca gcaaccagggt gtggaaagtc 3180  
aagcatgcattt ctaactccgc ccattccgg 3240  
cctaactccg cccaggcttcc cccattctcc 3300  
tgcagaggcc gaggccgcct ctgccttgc 3360  
tggaggctta ggcttttgc aaaaagctccc 3420  
ttgcacgcag gttctccggc cgctgggtt 3480  
cagacaatcg gctgccttgc tgccggctgt 3540  
cttttgcata agaccggactt gtccgggtcc 3600  
ctatcggttgc tggccacgc ggggttctt 3660  
gccccggggggg actggctgtt atggggcgaa 3720  
cttgcctctg ccgagaaagt atccatcatg 3780  
gatccggata cctgcccatt cgaccaccaa 3840  
cgatggaaag cccgttctgt cgatcaggat 3900  
ccagccgaac tggccggcag gtcacaggcg 3960  
actcatggcg atgcctgtttt gccaatatc 4020  
atcgactgtt gccggctggg tggccggac 4080  
gatattgttgc aagagcttgg cggcgaatgg 4140  
gcccgtcccg attcgacgcg catcgccccc 4200  
ggactctggg gttcgaaatg accgaccaag 4260  
atccacccgc cgcctcttat gaaaggttgg 4320  
ggatgtatctt ccagcgccgg gatctcatgc 4380  
ttgcagotta taatgtttac aaataaaagca 4440  
tttttcaacttgcatttctgt tgggtttgtt 4500  
gtataccggta tctttccgtt ctctcgctca 4560  
ggcgagcggtt atcagctcac tcaaaggcg 4620  
acgcaggaaaa gaacatgtga gcaaaaggcc 4680  
cgttgtggc gttttccat aggtccggcc 4740  
caagtcagag gtggcggaaac ccgacaggac 4800  
gtccctctgtt ggcgttcttgc gttccggacc 4860  
tcccttcggg aagcgccggc ctgttcaat 4920  
aggtegttgc ctccaaagctg ggctgtgtgc 4980  
ccttataccggta taactatctgtt ctgtttttt 5040  
cagcagccac tggtaacagg attagcagag 5100  
tgaagtgggtt gcttaactac ggttacacta 5160  
tgaaggccatg taccttcggaa aaaaggttgc 5220

ctggtagcgg tggttttttt gtttgcAACG agcagattac gcgcAGAAAA aaaggatctc 5280  
aagaagatcc tttagtcttt tctacgggt ctgacgctca gtggAACGAA aactcacGTT 5340  
aagggattt ggtcatgaga ttatcaaaaa ggatcttcac cttagatcctt ttaaaattaaa 5400  
aatgaagttt taaatcaatc taaagtataat atgagtaaac ttggTCTGAC agttaccaat 5460  
gcttaatcg tgaggcacct atctcagcga tctgtcttatt tcgttcatcc atagttgcct 5520  
gactccccgt cgttagata actacgatac gggagggtt accatctggc cccagtgtg 5580  
caatgatacc gcgagaccGA cgctcacccg ctccagattt atcagcaata aaccagccag 5640  
ccggaaggGC cgagcgcaga agtggTCTG caactttatc cggcctccatc cagtttatttt 5700  
atttgtccg ggaagctaga gtaagtagtt cggcaggtaa tagtttgcgc aacgttgg 5760  
ccattgtac aggcattcgtg gtgtcacGCT cgtcgtttgg tatggctca ttcaGCTCCG 5820  
gttcccaacg atcaaggcga gttacatgtat ccccatgtt gtgcAAAAAAA gcggttagct 5880  
ccttcggTCC tccgatcgtt gtcagaagta agtggccgc agtggTATCA ctcatggta 5940  
tggcagcact gcataattctt cttactgtca tgcacatccgt aagatgtctt tctgtgactg 6000  
gtgagtagtac aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgcctttGCC 6060  
cggcgtcaat acgggataat accgcGCCAC atagcagaac ttAAAAGTG ctcatcattt 6120  
gaaaacgttc ttccggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga 6180  
tgtaaacccac tcgtgcaccc aactgtatctt cagcatctt tactttcacc agcgttctg 6240  
ggtagcAAA aacaggaagg caaaatgcg caaaaaagg aataaggcgc acacggaaat 6300  
gttgaatact catacttttc cttttcaat attattgaag catttatcag ggttatttgc 6360  
tcatgagcgg atacatattt gaatgtatTTT agaaaaataa acaaataaggg gttcogcgcA 6420  
catttcccg AAAAGTGC CA CCTGACGTCA GATCGACGGA TCGGGAGATC G 6471

&lt;210&gt; 8

&lt;211&gt; 6629

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Plasmid  
pEFAd5E1BSA

&lt;400&gt; 8

tctccgcTTT ctcgctcac tgactcgctg cgctcggtcg ttccgctcg gCGAGCGGTa 60  
tcagctact caaaggcggT aatacgtta tccacagaat caggggataa cgcaggAAAG 120  
aacatgttag caaaaaggcca gcaaaAGCCC aggaacGTA aaaaggCCGc gttgctggc 180  
ttttccata ggTCGCCCC ccctgacGAG catcacaaaa atcGacGTC aagtcaGAGG 240  
tggcggAAACC cgacaggACT ataaagatac caggcgTTc cccctggAAAG ctccctcgTg 300  
cgctctcctg ttccgaccct gcccgttacc ggatacctgt cccgcTTCT ccTTcgGGA 360  
agcgtggcgc ttcttcatacgt ctcacgttG aggtatctca gttcggtgta ggtcgTTcGc 420  
tccaaAGCTGG ggtgtgtcGA cgaACCCCC gttcagcccc accgcgtgcGc ttatccGG 480  
aactatcgTC ttgagtccaa cccggtaaga cacaGCTTAT cggccactggc agcagccact 540  
ggtaacagGA ttagcagAGC gaggtatgtA ggcggTgcta cagaGTTCTT gaagtggTgg 600  
cctaactacg gctacactAG aaggacAGTA tttggTatCT ggcgtctgCT gaagccAGT 660  
accttcggAA aaAGAGTTGG tagctttGA tccggcAAAC aaaccACCGc tggtagcGGT 720  
ggTTTTTTG ttTgcaAGCA gcagattacG cgcagaaaaa aaggatctA agaagatCCT 780  
ttgatctttt ctacggggTC tgacgctcAG tggAACGAAA actcacgttA agggattttG 840  
gtcatgagat tatcaaaaaAG gatcttCACC tagatcctt taaaattaaaa atgaagtTTT 900  
aaatcaatct aaAGATATAA tgAGTAAACT tggTCTGACA gttaccaatG cttaatcaGt 960  
gaggcaccTA tctcagcgtat ctgtcttattt cgttcatcca tagttgcctG actccccGTC 1020  
gttagataa ctacgatacG ggaggGCTTA ccacGCTGGCC ccagtGCTGc aatgataaccG 1080  
cgagACCCAC gctcacGGGc tccagatttA tcagaataa accAGCCAGC cggAAAGGGCC 1140  
gagcgcAGAA gtggTCTGc aactttatcc gctccatcc agtctattaa ttgttgcGG 1200  
gaagcttagAG taagttagttc gccagttaat agtttgcGA acgttggTgc cattgttaca 1260  
ggcattcgtgg tgcacGCTC gtcgtttggT atggcttcat tcagctccgg ttcccaacGA 1320  
tcaaggcGAG ttacatgtatc ccccatgttG tgcaaaaaAG cggttagctc ctTcggTcCT 1380  
ccgatcgttG tcagaAGTA gttggccGCA gtgttacac tcAtGTTat ggcagcactG 1440  
cataattctc ttactgtcat gccatccGTA agatGTTT ctgtgactgg tgagtactca 1500  
accaAGTcat tctgagaata gtgtatGEGG cgaccGAGTt gcttGCTCCc ggcgtcaata 1560  
cgggataata cccgcGCCAc tagcagaact taaaAGTgc tcAtcatGgg AAAACGTTCT 1620  
tcggggcGAA aactctcaAG gatcttacG ctgttgAGAT ccagttcGAT gtaACCCACT 1680  
cgtgcacCCA actgatcttc agcatttt acTTcacCA gctttctgg gtgagcaAAA 1740  
acaggaaggc AAAATGCCGc aaaaaaggGA ataaggcGA cacggAAATG ttgaataactc 1800



agaccattca	cgttagccagc	cactctcgca	aggcctggcc	agtgtttgag	cataaacatc	5640
tgcacccgtg	ttccttgcat	ttgggtaaca	ggaggggggt	gttccctacct	taccaatgc	5700
atttgagtca	cactaagata	ttgcttgagc	ccgagagcat	gtccaaggtg	aacctgaacg	5760
gggtgtttga	catgaccatg	aagatctgga	aggtgtctgag	gtacgtatgag	accggccacca	5820
gggtcagacc	ctgcgagtgt	ggcggtaaac	atatttaggaa	ccagccgtg	atgtctggatg	5880
tgaccgagga	gctgaggccc	gatcacttgg	tgctggctg	cacccgcgt	gagtttggct	5940
ctagcgatga	agatacagat	tgaggtactg	aatatggctag	cagtgtaccc	tccctagtc	6000
cagtgtatgg	aaagagattt	agtcccagtcc	agggagatct	catccacttc	tgtgttctct	6060
ccacaggagc	ccactctgtt	caagtaaagc	ggccgcgact	ctagatcata	atcagccata	6120
ccacatitgt	agaggtttta	cttgctttaa	aaaacctccc	acacccccc	ctgaacactga	6180
aacataaaat	gaatgcaatt	gttgttggta	acttgtttat	tgcagcttat	aatggttaca	6240
aataaaagcaa	tagcatcaca	aatttcacaa	ataaaagcatt	tttttcactg	cattctagtt	6300
gtggtttgc	caaactcata	aatgtatctt	aagattaagg	gcgaattcgt	ttaaacctgc	6360
aggactatgc	ccttttagtga	gggttaattc	tgagcttggc	gtaatcatgg	tcatagctgt	6420
ttccctgtgt	aaatttgttat	ccgctcacaa	ttccacacaa	catacgagcc	ggaaggcataa	6480
agtgttaaagc	ctgggggtgcc	taatgagtga	gctaactcac	attaaatttgcg	ttgcgttcac	6540
tgcccgctt	ccagtcggga	aacctgtctgt	gccagctgca	ttaatgaatc	ggccaaacgcg	6600
cgggggagagg	cggttgcgt	attgggcgc				6629

<210> 9  
<211> 8297  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Plasmid 49E

<400> 9  
acgcgccaaat acgcaaaaccg cctctccccg cgcggtggcc gattcattaa tgcagctggc 60  
acgacagggt tcccgactgg aaagcgggca gtgagcgcaa cgcaattaat gtgagttgc 120  
tcactcatta ggcacccca gctttacact ttatgttcc ggctcgatg ttgtgtggaa 180  
tttgagcggy ataacaattt cacacaggaa acagctatga ccatgattac gccaagctca 240  
gaattaaccc tcactaaagg gactgtcct gcaggttaa acgaattcgc ccttaatctt 300  
aagctggccgc cccgacgttg gtcgcgagcc ctgggccttc acccgaactt ggggggtggg 360  
gtggggaaaaa ggaagaaaacg cggcgtatt ggcggcaatg gggtctcggt ggggtatcga 420  
cagagtgcga gcccgtggac cgaaccccgcc gtttatgaac aaacgaccga acaccgtcg 480  
ttttattctg tcttttatt gccgtcatag cgcgggttcc ttccgttatt gtctccttcc 540  
gtgttatcct caatctgtat ctcatcgct agagccaaac tcagcgcggg tgcaggccag 600  
caccagaatgtc tcgggcctca gtcctcggt cacatccagc atcacaggct ggttccata 660  
atgtttaccc ccacactcgc agggctgtca cctgggtggg gtctcatcgat acctcagcac 720  
cttccagatc ttcatggtca tgtaaaacac cccgttcagg ttccatctgg acatgtctc 780  
gggtcaaaacg aataatcttag tgtaactcaa attgcattgg taaggttagga acacccccc 840  
cctgttaccc aaatgcaagg aacagcgggt cagtatgtt aatgtcaaaaca ctggccaggg 900  
cttgcgagag tggctggcta cgtgaatggc cttcagcagg tgacagtgc cggtccgagca 960  
ggtcagcatc tgagaggccc tgcctcgca gttgccacat accatgttat gcttaatcac 1020  
agccacgcct ttcaactagca tgaagcaacc acagtccggag gccacattgt ggcgcaccct 1080  
ggagttaccc tcagacagga taccggatg acacccttca aagaggcatt tcttaattga 1140  
agccctgcct ttggggcgcac acaccacccc cttccagcag cagtaaaagg cacagccccc 1200  
aacccttaca tcgggtccagg ctccacaca ggtattgtt aaccataga agcttacacc 1260  
gtgttaggata aggttgtat tggccaggaa aaccgtaccg ctaaaattgg ggccagtaaa 1320  
ccttacattc ataataacca ccccgccat gccaaggcacc cccggccaca tatttattcat 1380  
gtcatatcta aaggccaccc tatccctcgat atctatctcc acctcgcccc cgttcccaga 1440  
aatgttagcaa caatttcgtt tatttacaag ttgtgttgc ttgtacttgc aatctggct 1500  
aagtggccacc ttgcataata ccataatagc ctccctcaaaa tcatccctg gtcgcagcca 1560  
gtaaatggtc agtgcgttca tgaataactt ctgcggccagc agatcaagct cattagcgc 1620  
attatccttg atctgttga aagtaataca ctccaggacgg tgcgttgc ttaagctaaa 1680  
agctagatc ctgcctctt ctgtgcctc acaagcccc cgtccctct ttacccccc 1740  
tagccccctgc ccattctctg taattgtcaa aatgcgttgc agttctggat acagttcage 1800  
cacctgtaca acatttattc ccggagggtcc agggccggctc tgggttcca tgggtctgc 1860  
tcctggccggcc gccgcctggc ttccctctgc tgctgtgt gtcctccgt cggttattatc 1920  
gccccggccga cggaaagacaa cagtagcagg cgattctgt gtctcacaac cgtctccac 1980  
agatgcatgg ccagaaaatc cagcaggatc ccccccgtca gatgggttgc ttgcgtccat 2040

ttatcctta taaaactcaa aaaagcaaca gcagccgcag cgccgccccgg tggaaaaaa 2100  
 tccaaagtct tgatgacctt ctcttgaaa agccctggt gacccagatt caaagaatca 2160  
 aacagctcac cacaggattt caaaagctct tcaaattccc acttgaatc ctcctaatt 2220  
 ctgcagacta actttgcctg ggttagagccc cacagaaacc tccaaaacca agaggtactg 2280  
 ttagagctct gttccagcaa gttacgcaca gcagaaaaat cttccaaaca ctcccaagcc 2340  
 tccatgctcg accggctccct accgacgctg gtcgcgcctc ttataccac gtagaacgca 2400  
 gtcagccaa tagaatgagt gccaatatgg aattccagg gaaaaaccgg ggcgggttta 2460  
 cgtttggct gcccttcac ttcccattga cgttattgg ctgcagaacg gtactttccc 2520  
 attaatcagc tatggaaaag taccgtttaa aggtcacgtt gcattagttt caatagccca 2580  
 ttgacgtcaa tggtggaaa gtacatggcg tttataat ggctggaaaa acccaatgac 2640  
 tcacccctat tgaccttatg tacgtccaa taatggaaa aaccattga ctcacccct 2700  
 attgacctt tgtactgggc aaaacccaat ggaagttccc tattgactca gtgtacttgg 2760  
 ctccaatggg actttcctgt tgattcaccc ctattgaccc tatgtactgg gaaaaaccca 2820  
 ttgaaaagtc ctaatgact cagtatatgg cggccgatac ttggcctcg tggccgatga 2880  
 cctcgagggg gggcccggtt cccgggtt gtagaatgtg tgcgaggcca gaggccactt 2940  
 gttagcgc aagtgccagc gggctgtca aagcgtatgc tccagactgc ttggggaaaa 3000  
 ggcctcccc taccggtag aattcgtaac caagattagc ccacggcgc ttatataccc 3060  
 ttaagcccc gccccattt acacgcatg caagttaaac attatctac cctttattaa 3120  
 acttacatca actcatcag caaacaagg cgttaaccac acacgcaatc acaggttac 3180  
 accttgcgctt tacagctcaa gtccaaaggt tgccaggctt cgtaagcaa 3240  
 gtctcgata cattccacag cctggcgcacg cccaccaact ctcacggca ctggtttaat 3300  
 gggcacgc gggaccaccc ggttatctc aggagggtgtg tttagaggac cggagtacca 3360  
 gctatccgtt ctactattgc attctctaga cacaggtgt gtcggcgctc tcaggatagc 3420  
 aggcgcattt ttaggacggc ggttaggtct tgcaggctcc ggttctggct cgggctcagg 3480  
 ctcaagggtca gacacaggac ttttaaaaaa aatcacaata caaaattctt taaaccacaa 3540  
 aactgtaaaa attaaaaaaaaaa aaattaccac accaaacccca ccactctatc accactgtcc 3600  
 cataattttc acttactgtt gacaaacatg ccacaggctt tcataatagca aagcgaacac 3660  
 ataatatctg ggtccccctt attcctccgg tgataatgtac aagacctgtca accgtgccc 3720  
 ggttaggttcca cataatctaa cacaacttcc tcacccctt catcctcgct gtcactgg 3780  
 gggaaagccag cctctggca gtaagatcg atcacctccg gtacaagggt tggcatagaa 3840  
 accggaccca aggtctctg ctccggctgc tgggtgtcc gggaaagggtt aggcggctcc 3900  
 ggagaaccgg ggcggcgaaa aaaaatgtt aagtcataatcc cttcctgtcac cgccaaacatt 3960  
 acagagtcgg gaaaaactctg cgaaacccgc tccctgtgg gatcttcggg ggccgtacg 4020  
 tctaaatcat acagtctgtt aagggttagt ggttcaaaat ggctaggagg tggaaagatta 4080  
 tcagccagta cctcttcgtat cagctgtcc aaaaagactgg cggccatttc ttccgttata 4140  
 acacctccgtt ggcagataat atgtctcatt ttcaatccg gtgtcgaggc ggctcgagg 4200  
 agaaaaactct actcgctggc actcaagagt ggctcttga ggaactcacc gggtaataat 4260  
 acactacacg tcagctgact ataactcgag aacggggag ccgactgtcc acgtgcgtcc 4320  
 cggaggcttgc cagaatgcgg aacaccgcgc gggcaggaac agggcccaca ctaccgc 4380  
 acacccgc tcccgcaccg cccctttccg gccgtgtcc tcggcgccgc ctgtcgagca 4440  
 ggcgtatttgc gccacagccc atcgctgtcg ggcgtgtcc attgtctccctt ggcgtgtcc 4500  
 gtctcgagg gtactgtga gacgtcgcc ttccgttgtt cactgtccggc acgcggcggaa 4560  
 ccccaaggaa cttcccgac tttagggcg gacgaggaaac gtcgcgggg ggcccacaaag 4620  
 ggttagcgccg aagatccggg tgacgtgtcc aacggacgtg aagaatgtgc gagaccagg 4680  
 gtccggcgccg ctgcgtttcc cggaaaccacg cccagagcag cccgtccctt ggcgtaccc 4740  
 agggctgtcc tggaaaaggc gcaaccccaa ccattaataa ctaatgtat gggtaataac 4800  
 ggttatccac agaatcagg gataacgcag gaaagaacat ggtacggcag tttaaagggtt 4860  
 acacctataa aagagagagc cgttatgtc tttttgttga tgtacagagt gatattattt 4920  
 acacgcgggg ggcacggatg gtatcccc tggccagtgc acgtctgtc tcaagataaag 4980  
 tctccgttca actttacccg gtgtgcata tcggggatga aagctggcgc atgtatgacca 5040  
 cggatatggc cagtgtgcgtt gtcgttca tcggggaga agtggctgtat ctcagccacc 5100  
 gggaaaatgtt catcaaaaac gccattaacc tgatgttctg gggaaatataa atgtcaggca 5160  
 ttagattatc aaaaaggatc ttccatctaga tcctttcac ttagaaagcc agtccgcaga 5220  
 aacggctgtc accccggatg aatgtcagct actgggtctat ctggacaagg gaaaacgc当地 5280  
 ggcggaaagag aaacggatg gcttgcgtg ggcttacatg gcatagacta gactggcg 5340  
 ttttatggac agcaagcggc cccggatttc cagctggggc gccctctgtt aaggttggg 5400  
 agccctgc当地 agttaactgg atggcttct cggccccaag gatctgtatgg cgccaggggat 5460  
 caagctctgttcaagagaca ggttagggat cgttgcgtt gattgaacaa gatggatgc 5520  
 acgcagggttc tccggccgtt tgggtggaga ggcttacatg ctatgtactgg gacaaacaga 5580  
 caatcggttgc ctctgtatgc gccgtgttcc ggctgtcgtc gacggggccgc cccgttctt 5640  
 ttgtcaagac cgcacgtgtcc ggtccctgttca atgaactgtca agacgaggca gacgggttat 5700  
 cgtggctggc cacgacggggc gttccctgtc cagctgtgtc cgcacgtgtc actgaagcgg 5760  
 gaaggggactg gtcgttattt ggcgtatgtc cggggcagga tccctgtca tctaccctt 5820

ctctgccga gaaagtatcc atcatggctg atgcaatgcg gcggctgcat acgcttgate 5880  
 cggctacgt cccattcgac caccaagcga aacatcgcat cgagcgagca cgtactcgga 5940  
 tggaaagccgg ttttgtcgat caggatgatc tggacgaaga gcatcagggg ctcgcgcac 6000  
 ccgaactgtt cgccaggctc aaggcgagca tgcccgacgg cgaggatctc gtcgtgaccc 6060  
 atggcgatgc ctgttgcgc aatatcatgg tggaaaatgg cgcgtttct ggattcatcg 6120  
 actgtggccg gctgggtgtg gcggaccgct atcaggacat aegcttggt acccgtgata 6180  
 ttgtctgaaga gcttggccgc gaatggctg accgcttctc cgtgtttac ggtatcgccg 6240  
 ctcccatttc gcagcgcatc gccttctatc gccttcttga cgagtttctc tgaattatta 6300  
 acgcttacaa ttccctgtatc cggttatttc tccttacgca tctgtgcgtt atttcacacc 6360  
 gcatacagggt ggcacttttc ggggaaatgt ggcggaaacc cctatattgtt tatttttcta 6420  
 aatacattca aatatgtatc cgctcatgag acaataaccc tgataaatgc ttcaataata 6480  
 ttgaaaaagg aagagtatga gtattcaaca ttccgtgtc gcccatttattc cctttttgc 6540  
 ggcattttgc ttccctgttt ttgctcaccc agaaacgctg gtgaaaagtaa aagatgtga 6600  
 agatcagttt ggtgcacgag tgggttacat cgaactggat ctcaacagcg gtaagatcct 6660  
 ttagagttt ccccccgaa aacgttttcc aatgtatgagc acttttaaag ttctgtatg 6720  
 tggcgggta ttatcccgta ttgacggccg gcaagagcaa ctggcgcgc gcatacacta 6780  
 ttctcagaat gacttgggtt agtacttacc agtacacagaa aagcatcttta cggatggcat 6840  
 gacagtaaga gaattatgca gtgctccat aaccatgagt gataacactg cggccaacctt 6900  
 acttctgaca acgatcggag gaccgaagga gctaaccgct ttttgcaca acatggggga 6960  
 tcatgttaact cgccttgcac gttggaaacc ggagctgaat gaagccatac caaacgacga 7020  
 gctgtacacc acgtgcctg tagcaatggc aacaacgttgcgcacaaactt taactggcga 7080  
 actacttact ctatcttccc ggcacaaatt aatagactgg atggaggcgg ataaagtgtc 7140  
 aggaccactt ctgcgtctgg cccttcggc tggctgggtt attgtgtata aatctggagc 7200  
 cggtagcgt gggctcgcc gtatcatttgc agcaactgggg ccagatgtta agccctcccg 7260  
 tatactgtttt atctacacga cggggagtc ggcacactatg gatgaacgaa atagacagat 7320  
 cgctgagata ggtgcctcac tgattaagca ttggtaacttgc ttagacaaatg tttactcata 7380  
 tatacttttag attgatttaa aacttcattttaaattttaaaggatcttagg tgaagatcct 7440  
 ttttgcataat ctcatgacca aaatccctta acgtgagttt tggctccact gagcgtcaga 7500  
 cccctgtt aagatcaaaag gatcttcttgc agatctttt tttctgcgcgtaatctgt 7560  
 ctgc当地 aaaaaaccac cgcttccatc ggtgggttgc tggccggatc aagagctacc 7620  
 aactctttt ccgaaggtaa ctggcttcag cagacgcgcgat accacaaata ctgtccttct 7680  
 agttagccg tagttaggc accacttcaa gaactctgttgc acaccgcata catacctcgc 7740  
 tctgttaatc ctgttaccag tggctgtgc cagttggcgat aagtcgtgtc ttaccgggtt 7800  
 ggactcaaga cgatgttac cgatataaggc gcagcggtcg ggctgaacgg ggggttcgt 7860  
 cacacagccc agcttggagc gaacgcacca caccgaactg agatacctac agcgtgagct 7920  
 atgagaaagc gccacgccttc ccgaaggggag aaaggcggac aggtatccgg taagcggcag 7980  
 ggtcggaaca ggagagcgcg cggggagct tccaggggaa acgcctgttgc atctttatag 8040  
 tcctgtcggtt ttcgcacc tctgacttgc gctgtcgat tttgtgtatc cgtcagggggg 8100  
 gcgagccata tggaaaaaccc ccagcaacgc ggcctttta cgggttctgg gctttgtc 8160  
 gcctttgtc cacaatgttctt ttcctgtgtt atccctgtat tctgtggata accgtattac 8220  
 cgcctttagt gtagctgata cgcctcgccg cagccgaacg accgagcgcga gcgagctgt 8280  
 gagcggaggaa gcggaag 8297

&lt;210&gt; 10

&lt;211&gt; 7174

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Plasmid 25F

&lt;400&gt; 10

acgcacaaat acgcaaaaccg cctctccccg cgcgttggcc gattcattaa tgcagctggc 60  
 acgacagggtt tcccgactgg aaagcggca gtagcgccaa cgcaattaat gtgagttac 120  
 tcactcatta ggcaccccaag gctttacact ttatgttcc ggctcgatg ttgtgtgaa 180  
 ttgtgagcggtt ataacaattt cacacaggaa acagctatga ccatgattac gccaagetca 240  
 gaattaaaccc tcaactaaagg gactagtcttgc gtagtttac acgatctgc ccttaatctt 300  
 aagctcggtt gtagcggtat ccccggttggagg aggagtgttgc tgaaccgcga cgctgggtgg 360  
 ggtcggttgc ttaagagggg cgctgtcaac gctgtcaagag tgggttgc gctgtggggcc 420  
 ggtgtactg gaatcgatac cggcatgattt gacagcctgg gcgaggatgtt caccgtatgg 480  
 tgataagaag acacgggaga ctttagtacgg tttcacaggc gtagacgtt tattgagtag 540  
 gattacagag tataacatag agtataatag atagtgtatc gggatccgtt 600

aacaggtgaa ccatttatac agtctcacgt ctctttattt catacgctcc gctaaatgtt 660  
tccattcgct catttgcac taatacagca gatttcgcaaa ctcactgaac caatcttctg 720  
tataaaaatg tacgcgtgc gtgtccaaat caacatcaat tttccctata tacagacagg 780  
ggctgccacc cgccccc accgcgaca ccgcaattag gaatggtagc ctgctgtca 840  
ggtccacgt aattaacatc ccgcacacgt tcccgtcgg tcgtctgcata aatactggag 900  
agaaatcgct aaaccccggt gacgcccaca tagccacgaa gtacaccctt gccacatca 960  
agtcatctc caacctggcc caaacataag tggccaaatc ggaaggagcc aggtggcaag 1020  
ccgataaccc catacgatgc aaaggtaacc cgtggcaagc gcattccccg aatgaagtt 1080  
cgaaaatac gtaacacagt agctgatagg catgaagcgg cgctggcata tgaagacacgt 1140  
catcatctc gtctgttcc atgtcatccc caacttcctc ctgcgtctc gtttcctgtt 1200  
ggccgcgtg ctgggtgtgc agcaccatct ccaggatctg ctgcgtctc atcttaatcc 1260  
ggactcgaga aaggcccgga gatgagaag aggagaacag cgccggcagac gtgcgtttt 1320  
gaagcgtcg agaatgcgg gcctccggag gacccgtggg cgcccccggg gcccctgagc 1380  
ccgcggccgtga gcccggccccc ggaccaccc ctcccgagcc tctgagccca gaaagcgaag 1440  
gagcaaagct gctattggcc gctgccccaa aggctaccc gttccattt ctcagcggt 1500  
ctgtccatct gcacgagact agtgagacgt gctacttcca ttgtcacgt ctgcacgac 1560  
gcgagctcg gggcgggggg gaacttcctg actagggag gatgagaagg tggcgcgaag 1620  
ggccaccaa agaacggagc cggttgcgc ctaccgggtt atgtggatg tgcgcggg 1680  
cagaggccac ttgttagcc ccaagtccca gccccgtc taaagcgtat gttccagact 1740  
gccttggaa aagcgcctcc cctaccggc agaattcgcg gcctcgacgg cctcggtggc 1800  
cagtcttagtc aataatcaat gtccgagctc gaatacactc cgctatcgat acgtgactgg 1860  
gtcatggctg cgccggacca cccgcaaca cccgtgacg cgccctgacg ggcttgcgt 1920  
ctccggcat ccgttacag acaagctgtt accgtctccg ggagctgcat gtgtcagagg 1980  
tttcaccgt cataccggaa acgcgcgagg cagccggatc ataatcgcg ataccacatt 2040  
tgttagggtt ttacttgctt taaaaacccctt cccacacccccc cccctgaacc tgaaacataa 2100  
aatgaatgca attgttggtt ttaacttgggtt tattgcagct tataatgggtt acaaataaagg 2160  
caatagcat acaaatttca caaataaagg attttttca ctgcattcta gttgtgggtt 2220  
gtccaaactc atcaatgtat ttatcatgtt ctggatcgaa gctctagagc ggccaaacttc 2280  
aggattggg tacagagaat ggttaggggtt gtgcgcgagac cccggatcccc gctactcat 2340  
acgtaggcag gttccatgtg caccggatc tggccaaatctt tggagagaat ggggatttct 2400  
gggttcatctt ctctcgggggg cggggctatc cccggcggaga gtcatacacc aaatttctgt 2460  
agaaaacggg ttttgcggc tcttgcggc acaaacttcg ggagttgggt taaaaaaatcg 2520  
gctgaagaat ggttctggaa gtgttctttt cagatctttt ttgttgaaaaa ctccagtggt 2580  
caggagccgaa tattgtcggtt gggctttgat ggtgggtgtc ccacagagac cctcatagcc 2640  
aggacccccc actccgcgac ggacatggat ctcaatgtt tctagcgcca tcttcaggcc 2700  
atgcacggaa ccaatggggg agccccggc cccacatcggtt gttatgcgtt gggggagggg 2760  
atccgagttat tccctggcca ccaatcagg aaccgcgaaac ggcgcacggc ccccttctc 2820  
catcataatg agggcctcac tgggggtctt ggggtcccg gggccggccca taatggtaac 2880  
gtgataatg cgctggggac cctcgtagtc tgcgaaatg gctttctcc ccatggacac 2940  
taggggctg aatgatgtt ccccgatgtt ctgcgggtc aggttagggt taaaaatcg 3000  
gcccgtggc accatttctc taaggctgtt ggtggattt cgctggctag ggtccacagg 3060  
gaccacggaa gtaaaggaaa tggccccat gtatgttggaa aggtccccat ggaacatgcg 3120  
gaatgggtt cggccatata ctgttagatg tacagggggg tctcgagaaac gagggagccg 3180  
actgcgcgacg tgcgtcccg aggcttgcag aatgcggaaac accgcgcggg caggaacagg 3240  
gcccacacta ccgcggccaca cccgcctcc cgccggccccc ctccggccg gctgctctc 3300  
gcgcgcctcg ctgagcagcc gctattggcc acagccatc ggggtgggg cgctgcccatt 3360  
gctccctggc gctgtccgtc tgcgagggtt ctgttagatc gtgcggcttc cgtttgcac 3420  
gtccggcactc ccgcgaaacctt caaggaaatc tcccgactta gggggggacg aggaagcg 3480  
gccccggggc ccacaagggtt agcggcggaaatccgggtt gctgtcgaaac ggacgttgaa 3540  
aatgtgcgag acccagggtt ggcgcgcgtt cggttcccg aaccacgccc agagcagccg 3600  
cgccctcgca caaaccacgg gctgccttgg aaaaggcgca accccaaatca ttaataacta 3660  
atgcatggcg gtaatacgtt tatccacaga atcagggtt aacgcaggaa agaacatggt 3720  
acggcagttt aaggtttaca cctataaaatg agagagccgt tatgtctgt ttgtggatgt 3780  
acagagtgtt attattgaca cggccggcg acggatgggtt atccccctgg ccagtgcacg 3840  
tctgtgtca gataaagtctt cccgttactt ttaccgggtt gtgcataatcg gggatggaa 3900  
ctggcgatcg atgaccaccc atatggccatg tgcgtccgtc tccgttatacg gggaaagaatg 3960  
ggctgatctc agccacccggc aaaatgacat caaaaacggcc attaaccctga tggcttctggg 4020  
aatataaaatg tcaggcatga gattatcaa aaggatctt accttagatcc ttttcacgtt 4080  
gaaagccagt ccgcgaaac ggtgttgcacc ccggatgtt gtcagctactt gggctatctg 4140  
gacaaggggaa aacgcgacccg caaagagaaa gcaggatgtt tgcgtggcc ttacatggcg 4200  
atagcttagac tggcggtttt tatggacacgc aacgcgacccg gaatttgcacgg ctggggcc 4260  
ctctggtaag gttgggaacg cctgcacaaatg aaactggatg gctttctccg cgccaaaggat 4320  
ctgatggcgcc agggatcaa gctctgtatca agagacagga tgaggatgtt ttcgcacatgt 4380

tgaacaagat ggattgcacg caggttctcc ggccgcttgg gtggagaggc tattcggtca 4440  
 tgactggca caacagaca tcggctgtc tcatggccgt gtcagcgca 4500  
 gggcgccccg gtttttttgc tcaagaccga cctgtccggc gcccgtaaat aactgcaaga 4560  
 cgaggcagcg cggctatcggt ggctggccac gacggggcggt cttgtcgca 4620  
 cgtgtcact gaagcggaa gggactggct gctattggc gaagtgcggg ggcaggatct 4680  
 cctgtcatct cacttgtc cttgtccggc agtatccatc atggctgtatc caatgcggcg 4740  
 gctgcatacg ctgtatccggc ctacctggcc attcggaccac caagcggaaac atcgcatcga 4800  
 gcgagcacgt actcgatgg aagccgtct tgcgtatcgt gatgtatcgg acgaagagca 4860  
 tcaggggctc ggcggccgc aactgttcgc caggctcaag gcgagcatgc ccgacggcga 4920  
 ggatctcgtc gtgaccatcg cgtatggccat atcatgggtgg aaaatggccg 4980  
 ctttctgga ttcatcgact gtggccggct ggggtgtggc gaccgtatc aggacatagc 5040  
 gttggctacc cgtatatttgc tgaagagatc tggccggaa tgggtgtgacc gcttcctcg 5100  
 gctttacggt atcgccgtc ccgattcgca ggcgtatcgcc ttctatcgcc ttcttgacga 5160  
 gtttctgta attattaacg cttacaattt cttgtatcggtt tattttctcc ttacgcatct 5220  
 gtgcggattt tcacaccgc tacaggtggc acttttccgg gaaatgtgcg cggaaaccct 5280  
 atttgtttat ttttctaaat acattcaaattt atgtatccgc tcatgagaca ataaccctga 5340  
 taaatgttc aataatattt aaaaaggaaag agtatgagta ttcaacattt ccgtgtcgcc 5400  
 cttattccct ttttgcggc attttgcctt cttgttttttgc ctcacccaga aacgctgtg 5460  
 aaagtaaaag atgtcgaaga tcagttgggt gcacgagtggtt acgtatcgatctc 5520  
 aacagcggta agatccttgc gagtttgc cccgaaagaaac gttttccaaat gatgagact 5580  
 tttaaagtgc tgcgtatgtgg cgcggtaata tcggcgatattt acgcggggca agagcaactc 5640  
 ggtcgccgc tacactattt tcagaatgtac ttgggtgtgtt actcaccatcgtt cacagaaaaag 5700  
 catcttacgg atggcatgac agtaagagaa ttatgcgtgtt ctgcataac catgagtgtat 5760  
 aacactgcgg ccaacttact tctgacaacg atcgaggac cgaaggagatc aaccgtttt 5820  
 ttgcacaaca tgggggatca tgaactcgc tttgtatcggtt gggaaacgggaa gctgaatgaa 5880  
 gccatccaa acgacgagcg tgacaccacg atgcgtgttagt caatggcaac aacggttgcgc 5940  
 aaacttaatc ctggcgaaacttactacta gttttccggc aacattaaat agactggatg 6000  
 gaggcggata aagttgcagg accacttctg cgctcgccccc ttccggctgg ctggtttatt 6060  
 gctgataaat ctggagccgg tgagcggtt tctcggtatc tattgtcggc actggggcca 6120  
 gatggtaagc cttcccgatc cgtatatttacacgacgg ggagtgcggc aactatggat 6180  
 gaacgaaata gacagatcgc tgagataggt gcctcaatcgtt taaagcattt gtaactgtca 6240  
 gaccaagttt actcatatat acttttagatt gattttaaac ttcattttaa attttaaagg 6300  
 atctaggatc agatccctttt tgataatctt atgacccaaa tcccttaacg tgagtttcg 6360  
 ttccactgatc cgtcagaccc cgtagaaaaat atcaaggat tttcttgatc tccctttttt 6420  
 ctgcgtctaa tctgtgtctt gcaaaacaaaaaa aaaccacccgc taccagcggtt ggttttttgg 6480  
 ccgatcaag agtaccaac tcttttccg aaggtaactg gcttcagcagc agcgcagata 6540  
 ccaaataactg tcttcttagt gtagccgtt taggcaccacttcaagaa ctctgtatc 6600  
 ccccttacat acctcgctt ctgtatccgtt ttaccgtgg ctgtcgccatc tggcgataag 6660  
 tcgtgtctta cgggttggc ctcaagacgtt tagtaccgg ataaggcgca gcggtcgcc 6720  
 tgaacggggg gttcggtc acagccacgc ttggagcgaa cgacccatc acgactgaga 6780  
 tacccatcgc gtgagctatc agaaaggcgcc acgttcccg aaggagaaaa ggcggacagg 6840  
 tattccgtaa gggcagggtt cggaaacagga gagcgcacgtt gggagttcc agggggaaac 6900  
 gcttggatc ttatagtcc tgcgtgggtt cggccacccatc gacttgcggc tcgatttttt 6960  
 tgcgtatcgatc cggggggccg gacccatgg aaaaacgcgc gcaacgcggc tttttacgg 7020  
 ttctgggtt tttgtgtccatc atgttcttc ctgcgttatac ccctgattct 7080  
 gtgataacc gtattaccgc ctgtatcgtt gctgataccg ctgcggccag ccgaacgcacc 7140  
 gagcgcagcg agtcaatcgatc gggaaagcg gaag 7174

&lt;210&gt; 11

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer V206

&lt;400&gt; 11

aacctcgaga ccccccgtata cattcta

27

&lt;210&gt; 12

&lt;211&gt; 27

<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer V207

<400> 12  
gccgttaact tcagggattg gttacag

27

<210> 13  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer V208

<400> 13  
cacctcgagt ccggatataag atgaacg

27

<210> 14  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer V209

<400> 14  
ccaggttaaca ggtgaaccat ttatacag

28

<210> 15  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: RT primer

<400> 15  
gccttgaga gttactttt g

21

<210> 16  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer cDNA 1

<400> 16  
aaacactgta cggcacccgc att

23

<210> 17  
<211> 21  
<212> DNA  
<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer cDNA 2

&lt;400&gt; 17

gcctttgaga gttactcttt g

21

&lt;210&gt; 18

&lt;211&gt; 8681

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Plasmid 60E

&lt;400&gt; 18

agcgcccaat acgcaaaccg cctctccccg cgcggtggcc gattcattaa tgcagctggc 60  
acgacagggtt tcccgactgg aaagcgggca gtgagcgc aa cgcattaaat gtgagttgc 120  
tcactcatta ggcaccccaag gctttacact ttatgtttcc ggctcgatg ttgtgtggaa 180  
tttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaagctca 240  
gaattaaaccct caactaaagg gactagtctt gcaggtttctt agtcttgca 300  
atttcggccctt aatcttaagc tgccgccccg acgttggctg cgagccctgg gccttcaccc 360  
gaacttgggg ggtgggggtgg ggaaaaggaa gaaacgcggg cgtattggcc ccaatgggg 420  
ctcgggtgggg tatcgacaga gtgcgcacccc tggaccgaa cccgcgtttt atgaacaaac 480  
gacccaaacac cgtgcgtttt attctgtctt ttatgtggc tcatacgccg ggttccttc 540  
ggtattgtct cttccgtgt tattcctaatt ctgtatcttc atcgcttagag ccaaactcag 600  
cgccgggtgcgca ggccagcacc aagtgtatcg ggctcagctc ctcgggtcaca tccagcatca 660  
cagcgctgggtt ctaaatatgt ttaccgcac actcgacagg tctgcacccg gtgcgggtct 720  
catcgtaacct cagcacccctt cagatcttca tggtcatgtc aaacaccccg ttcaggttca 780  
ccttggacat gctctgggc tcaagcaata tcttagtgtg actcaaattt cattggtaag 840  
gttaggaacac ccccttcctt ttacccaaat gcaaggaaca gcccgggtcagt atgttatgt 900  
caaacactgg ccaggccttg cgagagtggc tggctacgtg aatggtcttc agcaggtgac 960  
agttgccgtc cgagcagggtc agcatcttagt aggccctgtc ctcgcgttgc ccacatacca 1020  
tgttatgttt aatcacagcc acgcctttca cttagcatgaa gcaaccacag tcggaggcca 1080  
cattgtggcg caccctggag ttacccttagt acagatacc caaggtacac ctttcaaaga 1140  
ggcattttttt aattgaagcc ctgcctttgg ggcgacacac cacccttc cagcagcgt 1200  
aaaaggcaca gccccgaacc cttacatcggttcc cccaggcttc cccacaggta ttgttaaacc 1260  
catagaagct tacaccgtgtt aggataaggt tggattggc caggaaaacc gtaccgttca 1320  
aattggggcc agtaaacctt acattcataa taaccacccccc gtccatgcca agcaccaccc 1380  
gccacatatt tatcatgcta catctaaagg ccacccttac ctccgtatct atctccaccc 1440  
cggcccccgtt cccagaaatg tagcaacaaat tccctgtatatt tacaagtttgc tgcgttgc 1500  
acttgcaatc tggcctaagt gccaccccttgc catataccctt aatagccctcc tcaaaatcat 1560  
ccctggctg cagccagtaa gtggtcagct gctctatggaa atacttctgc gccagcagat 1620  
caagctcattt agcgcatttta tccttgcattt gttggaaatgtt aataactca ggacgggtgc 1680  
tggtcattaa gctaaaatgtt agattcttagt ctcctctgtt agcctcacaac gccccccgtt 1740  
ccctctttac cccctttac ccctgccttcat cctctgtat tgcctttatgtt cgtctcgtt 1800  
ctggatacag ttccagccacc tgcataacat tcaattcccgaa ggggtccaggc cggctctcg 1860  
gttccatggg ctctgtcttcc gcccggcccg cctggcttcc tccctgtgtt gctgctgtct 1920  
ctccgtcggtt attatcgccg ggcggacggaa agacaacagt agcaggcgat tcttgcgtct 1980  
cacaaccgctt ctccacacat gcatggccag aaaatccgcg aggttacccccc cgctcagatg 2040  
ggtttcttcg ctccattttt cctttataaa actcaaaaaaa gcaacacgcg cccgcgcgcg 2100  
ccccgggtgtg gaaaaatccca aagtcttgcattt gaccccttctt tggaaaaggcg cctgggtgacc 2160  
cagattcaaa gaatcaaaca gtcacccaca ggatttcaaa agcttcttcaaa attcccaattt 2220  
gtaatccctcc ttaattctgc agactaactt tgcctggat gagccccccaca gaaaccttcca 2280  
aaaccaagag gtactgttagt agctctgttc cagcaagttt cgcacacgcg aaaaatcttc 2340  
caaacactcc caagcctcca tgcctgcgtt ccttcttcc tggccgggtt gttggaccaccc 2400  
cctcgccttctt ccctggaaaaaaa aaaaatggaa ataaacaaca aaaccgaaca aaagcgaaac 2460  
gccacggatg gaggcgaaaaaa ccctcttcgaa agttctgcga ctgcacacag acagtcaaat 2520  
ggagcagacg caggcgagcg accggcccgag ccgcgttgc ggcgcaggctt ggggaagaga 2580  
ggcgccggta ggggatctga gtccggtagt gatctgcggc acgtgttgc cgcgtttaag 2640  
cgggtcgctt cgggtcgctt cgggttgcga ggccacacgc gtcacccat tttatgcgtt 2700  
ggaccccttggaa ccgcggccgc ccgactgcattt ctgcgttgc gatccgcata atgacaagac 2760  
gttggccgggg gtttgcgtca tcatagaactt aaagacatgc aaatataattt cttccgggaa 2820

cacccgcacaaacggcggc aacggggcac ggggatgaag cagctgcgccc actccctgaa 2880  
 gctcctgcag tccctcgccc ctccgggtga caagatagt tacctgtgcc ccgtccttgt 2940  
 gtttgcgc caacggacgc tccggctcag ccgcgtgacc cggctcgcc cgcaagaagg 3000  
 ctccggtaat atcaccgcag tcgtgcggat gctccagagc ctgtccacgt atacggtccc 3060  
 cattgacccat aggacccgc gageccctcgcc cgccgcggc ggccgcggcc gggggctgc 3120  
 gagcagacccg aaaagggtcac actctgggc gcgcgacccg cccgagtcag cggccgc 3180  
 gttaccaccc gccgacccaa cccccaccc cacggagggc ggggggtgc ttaagaggat 3240  
 cgccgcgtc ttctgcgtgc ccgtggccac caagacccaa ccccgagccg cctccgaatg 3300  
 agagtgttcc gttccctccc cttccccccg cgtcagacaa accctaacc acgcttaagc 3360  
 ggcccccgcg aggtccgaag actcatttgg atccactaga aacgaattcg taaccaagat 3420  
 tagccacgg cgcattatac accctttaag ccccgccca ttaaacacgc catgcaagtt 3480  
 aaacattatc tcaccctta ttaaactac atcaactcat tcagcaaaca aaggcgtaa 3540  
 ccacacacgc aatcacaggt ttacaccta tggctgggg cgtttacagc tcaagtccaa 3600  
 aggttgcaca ggctcgtaa gcaagtcctc gatacattcc aacgcctggc gacgcccacc 3660  
 aactctcagc gcaacttggtt taatgggc a cagccggacc accegggtgtc tctcaggagg 3720  
 tggtagaa ggaccggagt cacagctatc cgtactacta ttgcattctc tagacacagg 3780  
 tgatgtcggg cgtctcaggaa tagcaggcgc catttttagga cggccggtag gtcttgcagg 3840  
 ctccgggttct ggctcggtc caggctcagg ttcaagacaca ggacctttta aaaaaatcac 3900  
 aataaaaaat tctttaaacc acaaaaactgt aaaaattaaa aaaaaaattaa ccacacccaa 3960  
 cccaccaccc tatcaccaccc tggccataat ttcaacttac tggtagacaaa catgccacag 4020  
 gtccctatatac acaaaggcga acacataata tctgggtccc ccttatttc cccgtgataa 4080  
 tgacaagacc tgcaaccgtg cccgggggtgc tccacataat ctaacacaaa ctccctcaccc 4140  
 tcttcattctt cgtcgtaact gggtggaaag ccagccctgt ggcaggtaag atcgatcacc 4200  
 tccggtaaa gtttggcat agaaaccgga cccaaaggcgc tctgctccgg ctgctcgcc 4260  
 tgccggggaa ggtgaggcgcg ctccggagaa cccggccgc gggggaaagt gagaagtca 4320  
 atcccttctt gcacccgc当地 cattacagag tcggaaaaa tctgcaaaac cgcctccctc 4380  
 ttggatctt cggggggccgt cacgtctaaa tcatacagtt cgtgaagggt aggtggtca 4440  
 aatggctag gaggtggaaag attatcagcc agtacctctt cgatcagctg gtccaaaaga 4500  
 ctggcggcca tttcttcggt aataacaccc tggcggcaga taatatgtct cattttcagt 4560  
 cccgggtcg gaggcgc当地 gaggaaaaa ctctactcgc tggcactcaa gaggccctc 4620  
 ttgagaaact caccgggtat aaatacacta cacgtcagct gactataact cgagaacgag 4680  
 ggagccgact gcccgcgtgc gctccggagg cttgcagaat gggaaacacc ggcggccgc 4740  
 gaacaggccc cacactaccc ccccacaccc cgcctccgc accggccctt cccggccgc 4800  
 gctctcgccg cggccctgtcg agcagccgcatttgcaca gcccattcgc gtcggccgc 4860  
 tggcattgtctt ccctggcgtc gtccgtctgc gagggtaact gtgagacgtg cggccctcg 4920  
 ttgtcactcgc cggcacccgc cgaaccgc当地 ggaaccttcc cgacttaggg gggacgagg 4980  
 aaggcgtcgc gggggggccca caagggtacg ggcgaagatc cgggtgacgc tgcgaacgga 5040  
 cgtgaagaat gtgcgagacc cagggtcgc当地 gcccgtcgt ttccggaaac caccggccaga 5100  
 gcagccgc当地 ccctgc当地 acccagggt gcctggaaa aggcgc当地 ccaaccatta 5160  
 ataactaatg catggcgtta atacggttat ccacagaatc agggataac gcagggaaaga 5220  
 acatggtaatc gcagtttaag gtttacaccc ataaaagaga gagccgttat cgtctgttt 5280  
 tggatgtaca gagtgatatt attgacacgc cggggccgc当地 gatgggtatc cccctggcc 5340  
 gtgcacgtct gctgtc当地 aaagtctccc gtgaacttta cccgggtgtc catatcgggg 5400  
 atgaaagctg ggc当地 catgtatc accaccgata tggcactgt gccggcttcc gttatcgggg 5460  
 aagaagtggc tgatctc当地 caccgc当地 atgacatcaa aaacgc当地 cattt accctgatgt 5520  
 tctggggat ataaatgtca ggc当地 atgatgatc当地 tatcaaaaag gatcttccacc tagatcctt 5580  
 tcacgtagaa agccagtc当地 cagaaacggt gctgacccgc当地 gatgaatgtc agtactggg 5640  
 ctatctggac aaggaaaac gcaaggc当地 agagaaaagca ggtacttgc agtgggttta 5700  
 catggc当地 gata gctactgg ggggtttat ggacagacccaa tggc当地 gagctg 5760  
 gggccccc当地 tggtaagggtt gggaaaggcc local gcaaaggtaaa ctggatggct ttctcgcc 5820  
 caaggatctg atggc当地 cagg ggtcaagct ctgatcaaga gacaggatgaa ggatcggttcc 5880  
 gcatgattga acaagatggc tggcactccgc当地 ctgggtgtc gagaggctat 5940  
 tcggctatga ctggccacaa cagacaatcg gctgtctga tggccgc当地 ttccggctgt 6000  
 cagccgc当地 ggc当地 cggccgtt cttttgtca agaccgc当地 gtc当地 ggcc 6060  
 tgcaagacgc ggc当地 cggcc当地 ctatctggc当地 tggccacgc gggcttcc local tgccgactg 6120  
 tgctcgacgt tgc当地 actggctgtt atggggc当地 gtc当地 cggccggcc 6180  
 aggatcttcc local gtc当地 ctgc当地 cttgctctg cccgagaaatg atccatcatg gctgatgca 6240  
 tgc当地 cggcc local gcatc当地 gtc当地 gatccggctt cctgccc当地 cggcc当地 cccaa gcaaccatc 6300  
 gcatc当地 cggcc local agcactgact cggatggaaag cccggtttgt cgtactggat gatctggacg 6360  
 aagagcatca ggggctc当地 ccagccgaaac tggc当地 cggcc local gtc当地 cggcc local agcatgccc 6420  
 acggccgagga ttc当地 cgtc当地 accccatggc当地 atgc当地 ctgtt gccgaaatac atggtgaaa 6480  
 atggccgctt ttctggattc atcgactgtg gccggctggg tggccggcc local cgctatcagg 6540  
 acatagcgtt ggttaccctg gatattgtg aagagcttgg cggccgatg gctgaccgct 6600

tcctcgtgct ttacggtata gccgctcccg attcgcagcg catgccttc tatgccttc 6660  
 ttgacgagtt cttctgaatt attaacgttt acaatttcct gatgcggtat tttctcctta 6720  
 cgcacatctgt cggttatttca caccgcatac aggtggact tttcggggaa atgtgcgcgg 6780  
 aacccttattt tgtttatttt tctaaataca ttcaaatatg tatccgctca tgagacaata 6840  
 accctgataa atgcttcaat aatattgaaa aaggaaagagt atgatattc aacatttccg 6900  
 tgcgcctt atcccctttt ttgcggcatt ttgccttcct gtitttgctc acccagaaac 6960  
 gctgggtgaaa gtaaaaagatg ctgaagatca gttgggtgca cgagtgggtt acatcaact 7020  
 ggatctcaac akgcgttaaga ttcttgagag ttttcggccc gaagaacgtt ttccaatgt 7080  
 gagcaactttt aaagttctgc tatgtggcgc ggtattatcc cgatattgacg ccggcaaga 7140  
 gcaactcggt cgccgcatac actatttca gaatgacttgc ttgagactt caccagtcc 7200  
 agaaaagcat cttacggatg gcatagact aagagaatta tgcagtgcgt ccataaccat 7260  
 gagtgataac actgcggcca acttactt gacaacgatc ggaggaccga aggagcta 7320  
 cgctttttt cacaacatgg gggatcatgt aactcgcctt gatcgttggg aaccggagct 7380  
 gaatgaagcc ataccaaagc acgagcgtga caccacatg cctgttagcaa tggcaacaac 7440  
 gttgcgcaaa ctattaactg gcgaactact tactctact tcccgccaa attaataga 7500  
 ctggatggag gcgatggaa ttgcaggacc acttctgcgc tccggccctt cggctggctg 7560  
 gtttatttgc gataaatctg gagccgtgta gctggggctc cgccgtatca ttgcagact 7620  
 gggccagat gtaagccct cccgtatgt agttatctac aegacggggg gtcaggcaac 7680  
 tatggatgaa cggaaatagac agatcgtga gataggtgcc tcaactgatta agcattgtt 7740  
 actgtcagac caagtttact catataact ttagattgtat taaaacttc attttaatt 7800  
 taaaaggatc taggtgaaga tccttttga taatctcatg accaaaatcc cttAACGTGA 7860  
 gttttcggtc cactgagcgt cagacccgt agaaaagatc aaaggatctt cttgagatcc 7920  
 ttttttctg cgcgtatct gctgttgcg aaaaaaaaaa ccaccgctac cagcgggtgt 7980  
 ttgtttgcgc gatcaagagc taccaactt tttccgaag gtaactggct tcagcagac 8040  
 gcagatacca aatactgtcc ttctagtgta gccgtatgtt gggcaccact tcaagaactc 8100  
 ttagcaccg cctacatacc tcgtctgtt aatctgtt ccagtggctg ctgccagttg 8160  
 cgataagtcg tgcgttaccg ggttggactc aagacgatag ttacccgata aggccgcacg 8220  
 gtcgggctga acgggggggtt cgtgcacaca gcccagctt gagcgaacga cctacaccga 8280  
 actgagatac ctacagcgtg agctatgaga aagcgcacg ctccccgaag ggagaaaggc 8340  
 ggacaggtat ccgttaagcg gcagggtcg aacaggagag cgacgcgggg agcttccagg 8400  
 gggaaacgccc tggtatctt atagtcgtt cgggttgcg cacctctgac ttgagcgtcg 8460  
 attttgtga tgctcgtag gggggcgag cctatggaa aacgcgcagca acgcggcctt 8520  
 ttacggttc ctgggttctt gctggcttt tgctcacatg ttcttcctg cgttatcccc 8580  
 tgattctgtg gataaccgtt ttacccctt tgatgtgatc gataccgctc gccgcagccg 8640  
 aacgaccgag cgacgcgtt cagttagcga ggaagcggaa g 8681

<210> 19  
 <211> 5428  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Plasmid 36E

<400> 19  
 tcttccgtt cctcgctcac tgactcgctg cgctcggtcg ttccggctgcg gcgagcggta 60  
 tcagctcaact caaaggcggt aatacggtt tccacagaat caggggataa cgcaggaaag 120  
 aacatgtgag caaaaaggcca gaaaaagccc aggaacccgtt aaaaaggccgc gttgctggcg 180  
 tttttccata ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtccagg 240  
 tggcgaaacc cgacaggact ataaagatatac caggcggttcc cccctggaaat cccctcggt 300  
 cgctctctgt ttccgaccct gcccgttacc ggataacctgt ccgccttttcccttcggga 360  
 agcgtggcgc ttctctatag ctcacgtgtt aggtatctca ttccgggtgtt ggtcggtcg 420  
 tccaaagctgg gctgtgtgca cgaacccccc gttcagcccg accgcgtgcgc cttatccgtt 480  
 aactatcgtc tttagtccaa cccggtaaga caccgtttt ccgcactggc agcagccact 540  
 ggtaacagga tttagcagagc gaggtatgtt ggcgggtcta cagatgtttt gaagtgggtt 600  
 ccttaactacg gtcacacttag aaggacagta ttggatctt ggcgtctgtt gaagccagg 660  
 accttcggaa aaagagttgg tagctcttgc tccggcaaac aaaccaccgc tggtagcgtt 720  
 ggtttttttgg tttgcaggca gcaaggatc acgcaaaaaa aaggatctca agaagatctt 780  
 ttgatctttt ctacggggtc tgacgtcgat tggaaacggaa actacgttta agggatttt 840  
 gtcatgatc tatcaaaaatc gatcttacc tagatccctt taaattaaaa atgaagttt 900  
 aaatcaatctt aaagttatac tgatgttgcata gttaccaatg cttaatcgtt 960  
 gaggcaccta ttcacgtat ctttgcgtt ctttgcgtt actccccgtc 1020

gttagataa ctacgatacg ggagggctta ccatctggcc ccagtgcgtc aatgataccg 1080  
cgagaccac gtcacccggc tccagattta tcagaataa accagccgc cggaagggcc 1140  
gagcgcagaa gtggcctgc aactttatcc gcctccatcc agtctattaa ttgttgcgg 1200  
gaagctagag taagtagttc gccagttaat agttgcgc acgttgttgc cattgttaca 1260  
ggcatcggtt tgcacgcgc gtcgtttgt atggcttcat tcagtcgg ttcccaacga 1320  
tcaaggcgag ttacatgatc cccatgttg tgaaaaaaag cggttagctc cttcggctt 1380  
ccatcggtt tcagaagtaa gttggccga gtgttatcac tcatggttat ggcagcactg 1440  
cataattctc ttactgtcat gccatccgta agatgtttt ctgtactgg tgagttactca 1500  
accaagtcat tctgagaata gtgtatgcgg cgaccgagtt gctcttgcgc ggcgtcaata 1560  
cgggataata cccgcgcaca tagcagaact taaaagtgc tcatcatgg aaaacgttct 1620  
tcggggcgaa aactctcaag gatcttaccg ctgtttagat ccagttcgat gtaacccact 1680  
cgtgcaccca actgatcttc agcatcttt acttccatca gcgtttctgg gtgagcaaaa 1740  
acaggaaggc aaaatgccgc aaaaaaggaa ataaggcga cacggaaatg ttgaataactc 1800  
atactttcc ttttcaata ttattgaagc atttatcagg ttattgtct catgagcgga 1860  
tacatattt aatgtatatta gaaaaataaa caaatagggg ttccgcgcac atttccccga 1920  
aaagtgcac ctgtatgcgg tgtgaatac cgcacagatg cgtttaggaa aaataccgca 1980  
tcagggaaatt gtaagcgta ataattcaga agaactcgat aagaaggcga tagaaggcga 2040  
tgcgctgcga atcggggagcg cgatcccgat aaagcacgag gaagcggtca gcccattcgc 2100  
cgcaagactc ttccagcaata tcacgggttag ccaacgtat gtcctgtatag cggtccggca 2160  
caccagccg gccacagtcg atgaatccag aaaagcggcc attttccacc atgatattcg 2220  
gcaagcaggc atcggccatgg gtcacgcga gatccgcgc gtcgggcgtg ctgccttga 2280  
gcctggcgaa cagttccggct ggccgcgcgc cctgtatgcgc ttccgtccaga tcatctgtat 2340  
cgacaagacc ggcttccatc cgatcgatc ctgcgtcgat gogatgtttc gcttgggtt 2400  
cgaatggcga ggtagccggta tcaagcgat gcagccgcg cattgcatca gccatgtatgg 2460  
atacttttc gycaggagca aggttagatg acaggagatc ctgcggccgc acttcggcca 2520  
atagcagcca gtccttccc gtttcgtga caacgtcgat cacagctgcg caaggaacgc 2580  
ccgtcggtgc cagccacgt agccgcgtt cctcgatcgatc agggcaccgg 2640  
acagtcgggtt cttgacaaaaa agaaggcggc gcccctgcgc tgacagccgg aacacggcgg 2700  
catcagagca gcccattgtc tgggtggcc agtcatagcc gaatagcctc tecacccaag 2760  
cgccggaga acctgcgtgc aatccatctt gttcaatcat gogaaacgtat cctcatctt 2820  
tctcttgcgc agagcttgcat cccctgcgc atcagatctt tgccggcgag aaagccatcc 2880  
agtttactttt ccaaccttac cagagggcgc cccagctggc aattccgggt 2940  
cgctgtgtt cccataaaacc gcccacgttca gctatgcgc tggtaagccca ctgcaagcta 3000  
cctgtttctt ctttgcgtt gctttttccc ttgtccagat agcccgatg ctgacattca 3060  
tccggggtca gcaccgttgc tgcggactgg ctttctacgt gaaaaggatc taggtgaaga 3120  
tccttttgcataatctcatg cctgacatctt atattccccca gaacatcagg ttaatggcgt 3180  
ttttgtatgtc attttcgtgg tggcttagat cagccacttc ttcccgata acggagacgg 3240  
gcacactggc catacggttgc gtcacatgc gcccatttc atccccgata tgcaccaccc 3300  
ggtaaaggc acggggagact ttatctgaca gcaagacgtgc actggccagg gggatcacca 3360  
tccgtcgccc cggcgtgtca ataatatcac tctgtacatc cacaacacaga cgataacggc 3420  
tctctttt ataggtgtaa accttaaact gcccgttgc tggctgcgc aactgttgg 3480  
aaggcgcgtc ggtgcggcc tcttcgtat tacggcgttgc ggcggaaagggg ggatgtgttgc 3540  
caaggcgatt aagtgggtt acgccagggt tttcccgatc acgacgttgc aaaaacgcgg 3600  
ccagtgttgc gtaatcgcac tcactatagg gcaattggaa tttagccggc gcaatttca 3660  
ccgggttaggg gaggcgtttt tcccaaggca gtcggagca tgcgttttag cagcccgct 3720  
ggcacttggc gtcacacaag tggcctctgg ctccgttgc acatccacatc caccggtagg 3780  
cgccaaacccgg ctccgttctt tgggtggccccc ttccgttgcac cttctactcc tcccctatgc 3840  
aggaaggttcc ccccccccccc gcaagctcgat tgcgttgc gtcgacaaat ggaagtagca 3900  
cgatcgacta gtcgtgtca gatggacacgc accgtgttgc aatggaaacgc ggtaggccctt 3960  
tggggcagcg gccaatagca gctttgttcc ttcgttttgc gggctcagat gtcggaaagg 4020  
gggtgggtccg ggggggggctt cagggggggc gtcaggggcg gggccggccgc cggaaagggtcc 4080  
tccggaggcc cggcatttcc gtcacgttca aaagccgcacg ttcgttgcgc tgggttccctc 4140  
ttccctatctt cccggccctt ttcgttgc gatggatgc aacgacgttgc agatcttgc 4200  
gatgggtgtc cagccaccgc acgtggccca acagggaaacgc gagccgttgc gggggatgg 4260  
ggatgacatg gaagacgcacg aagatgtatgc cggatgttgc atgcacgttgc cgttcatgc 4320  
ctatcgttca ctgtgttgcatttcc ttcgttgc gatggatgc ttcgttgcacgg 4380  
gttacctttt catcgatgg ggttacgttgc ttccgttgc gtcgttgc gtcgttgc 4440  
ttatgttgc gccagggttgc aggtatgttgc ggggtgtact tgcgttgc 4500  
gtggcggtca cccgggtttt gtcgttgc gtcgttgc gtcgttgc gtcgttgc 4560  
cgatcggttgc gatgttgc gtcgttgc gtcgttgc gtcgttgc 4620  
gtccgttgc gggggggggc gtcgttgc gtcgttgc gtcgttgc 4680  
tttggacacg cagccgttgc attttatac agaagatgg ttcgttgc gtcgttgc 4740  
gctgttattac tggcaatgtca gcaatggaa acatgttgc gtcgttgc aataaaagaga 4800

cgtgagactg tataaatggc tcacctgtta acggatccca cgtcactatt gtatactcta 4860  
tattatactc tatgttatac tctgtaatcc tactcaataa acgtgtcacg cctgtgaaac 4920  
cgtaactaagt ctcccgtgtc ttcttatcac catcagggtga catcctcgcc caggctgtca 4980  
atcatgccgg tatacgattcc agtagcaccg gccccacgct gacaacccac tcttgcagcg 5040  
tttagcagcgc ccctttaac aagccgaccc ccaccagcgt cgccgttact aacactcctc 5100  
tccccggggc atccgctact cccgagctta agattaaggg cgaattcggt taaacctgca 5160  
ggactagtcg ctttagtggag ggtaattct gagcttggcg taatcatggt catagctgtt 5220  
tccctgtgtga aattgttatac cgctcacaat tccacacaac atacgagccg gaagcataaa 5280  
gtgtaaagcc tgggggtgcct aatgagtggag ctaactcaca ttaattgcgt tgcgctcact 5340  
gcccgcgttcc cagtcgggaa acctgtcgtg ccagctgcat taatgaatcg gccaacgcgc 5400  
ggggagagggc ggtttgcgtt ttgggcgc 5428